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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/681,917	10/10/2003	Kazuyuki Kondo	03500.017638	7686

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EXAMINER	
SCHWARTZ, JORDAN MARC	
ART UNIT	**PAPER NUMBER**
2873	

DATE MAILED: 12/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/681,917	KONDO ET AL.	
	Examiner	Art Unit	
	Jordan M. Schwartz	2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.
2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-6* is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-6* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☒ The drawing(s) filed on *10 October 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a)☒ All b)☐ Some * c)☐ None of:
1.☒ Certified copies of the priority documents have been received.
2.☐ Certified copies of the priority documents have been received in Application No. _____.
3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date *10/10/03,11/20/03*.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☒ Other: *Foreign Reference*.

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

The drawings are objected to because Figures 6 and 7 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are further objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: specifically, in reference to Figure 3, the specification makes reference to a "first reflective mirror 3a", however, "3a" is not shown in this Figure. Apparently, what is described in the specification as "3a" is shown in Figure 3 as "3". Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Information Disclosure Statement

The information disclosure statement filed November 20, 2003 fails to comply with 37 CFR 1.98(a)(2)(iii), which requires a legible copy of any cited U.S patent application which includes the specification, including the claims and the drawings of the cited applications or the portion of the application which caused it to be cited, including any claims directed to that portion. Specifically, applicant has cited two U.S. applications but has not provided the aforementioned and therefore these two references have been crossed out and have not been considered.

For applicant's information, in the IDS received October 10, 2003, applicant lists U.S. patent number 5,547,887 dated 12/8/98 by inventor Ogura et al. This patent number, however, is by a different inventor and has a different patent date. The assumed meaning is patent number 5,847,887 which is by Ogura et al and is dated 12/8/98 and therefore the IDS was corrected by the examiner to indicate that the latter was the document considered. If the examiner's assumption was incorrect it is suggested that the intended patent number be resubmitted on a new IDS statement for consideration.

Claim Rejections - 35 USC § 112

Claims 1-5 (and dependent claim 6) are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With reference to claims 1-5, applicant uses the term "optical element", however, the term "optical element" is known in the art of optical systems as having a meaning differing from what applicant is apparently describing and showing in the Figures and therefore the intended meaning of "optical element" is not clear rendering the claims vague and indefinite. Specifically, in the Manual of Classification, and as generally used in the art of optical systems, "optical element" is defined as "A structure which performs a basic optical function, i.e., the structure, when exposed to or placed in the path of a light beam, will cause refraction, diffraction, attenuation, or blocking of the light or a modification in the character or properties of the light. In lenses, the complete lens is considered an optical element, while the individual masses of a plural element lens are considered as lens elements or lens components." Therefore, "optical element" is known in the art to mean a single structure i.e. a unitary structure such as a complete lens or a complete mirror. The figures show a plurality of mirrors i.e. the mirrors do not appear to be part of a unitary structure and therefore do not appear to be part of a "single optical element having a plurality of reflective surfaces". It is therefore not clear if applicant meant to claim "a plurality of optical elements including a plurality of off-axial reflective surfaces, the imaging optical elements including at least one ..." (which is the assumed meaning for purposes of examination) or if applicant is attempting to claim a single unitary structure having a plurality of reflective surfaces, or if some other meaning is intended, and the lack of clarity renders the claims vague and indefinite.

In further reference to claim 4, applicant is claiming one of the off-axial reflective surfaces as a non-circular diaphragm. The specification and Figures apparently disclose embodiments having off-axial reflective surfaces and further disclose a non-circular diaphragm within the imaging optical system but do not disclose any embodiments in which the reflective surface itself is a diaphragm. The intended meaning is therefore not clear rendering the claim vague and indefinite. Furthermore, if the diaphragm is "non-circular" it need not have a diameter (such as if it is rectangular) and therefore the claimed "whose diameter" further renders the claim vague and indefinite. For purposes of examination, the assumed meaning of claim 4 is, "An imaging optical system according to claim 1, further comprising a non-circular diaphragm, having a diameter…".

Claim Objections

Claims 1-5 are objected to for the following reason. Since the intended meaning could be determined from what is set forth in the specification and Figures, a 112 rejection has not been made but instead this lack of clarity issues is being raised in the following objection.

Specifically, in reference to claims 1-4, applicant is claiming "in a pixel arrangement direction" which creates a lack of clarity since applicant has not claimed that the sensor comprises pixels with the pixels arranged linearly. From what is disclosed in the specification, this is the assumed meaning and therefore it is suggested that applicant claim "is imaged onto a line sensor comprising a plurality of pixels arranged linearly along the sensor" or similar language to provide additional clarity.

In reference to claim 5, applicant is claiming "the main scanning direction" and "the sub scanning direction", however, these terms lack an antecedent basis. Specifically, applicant has not claimed that the imaging optical system is providing scanning and further that it is has both a main and sub scanning direction (which is apparently assumed from what is set forth in the specification). For purposes of examination, from what is set forth in the specification, the assumed meaning is, "An imaging optical system according to claim 1, wherein, the imaging optical system provides scanning and wherein the imaging optical system has a main scanning direction and a sub scanning direction, and wherein..." and it is suggested that applicant insert this or similar language to provide additional clarity.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6 are rejected under 35 U.S.C. 102(a) as being anticipated by EP 1 239 655 A2 (hereinafter referred to as "EP'655").

EP'655 reads on these claims by disclosing the limitations therein including the following: an imaging optical system (abstract) with image information being imaged onto a line sensor (abstract). The line sensor of EP'655 will inherently comprise a plurality of pixels arranged linearly along the sensor this being reasonably based upon EP'655 disclosing the line sensor for comprised of a CCD for use in scanner, similar to that of the claimed invention. EP'655 further discloses the imaging optical system comprising a plurality of optical elements including a plurality of off-axial reflective surfaces (as this limitation is understood, Figures 1A and 1B, paragraph 0039); the imaging optical elements including at least one of the plurality of off-axial reflective surfaces whose length in a pixel arrangement direction of the line sensor is longer than a length thereof in a direction perpendicular to the pixel arrangement direction of the line sensor (Figures 1A and 1B with "X" as the main scanning direction as shown in Figure 1A and the length in the main scanning direction i.e. the pixel arrangement direction as longer then in the perpendicular direction as shown in Figure 1B in which all of the mirrors are depicted as longer in the "X" direction). Ep'655 further discloses at least two such reflective surfaces whose length in a pixel arrangement direction of the line sensor is longer than a length thereof in a direction perpendicular to the pixel arrangement direction of the line sensor (Figures 1A and 1B). Ep'655 discloses all of the reflective surfaces as having a length in a pixel arrangement direction of the line sensor as longer than a length thereof in a direction perpendicular to the pixel arrangement direction of the line sensor so therefore discloses one of these surfaces as the surface nearest the object and another as a surface nearest to the line sensor (Figures 1A and 1B). EP'655 further discloses a non-circular diaphragm having a diameter in a pixel arrangement direction of the line sensor as longer than a diameter thereof in a direction perpendicular to the pixel arrangement direction of the line sensor (paragraphs 0068 and 0108, Figure 1A and 1B, re “SP”); the imaging optical system provides scanning and wherein the imaging optical system has a main scanning direction and a sub scanning direction (paragraphs 0136, 0137, Figure 1A); the imaging optical system within an image reading apparatus (abstract); and an original table on which an original is put (paragraph 0038). It is believed that the embodiments of EP’655 will inherently satisfy the condition of claim 5, this being reasonably based upon the similarity in structure between the imaging optical system of EP’655 and that of the claimed invention.

Claims 1-3 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Brandestini et al patent number 5,724,160.

Brandestini et al reads on these claims by disclosing the limitations therein including the following: an imaging optical system (abstract) with image information being imaged onto a line sensor (abstract, Figure 6, column 6, lines 62-67, column 8, line 1); a plurality of pixels arranged linearly along the sensor (column 2, lines 51-64, column 6, lines 62-67, column 8, line 1); the imaging optical system comprising a plurality of optical elements including a plurality of off-axial reflective surfaces (Figure 6 with reflecting surfaces on mirrors “621”, “620” and “611” depicted as off-axial); the imaging optical elements including at least one of the plurality of off-axial reflective surfaces whose length in a pixel arrangement direction of the line sensor is longer than a length thereof in a direction perpendicular to the pixel arrangement direction of the line sensor (Figure 6 which shows all three reflective surfaces of mirrors “621”, “620” and “611” as longer in the line direction i.e. the pixel arrangement direction of line sensor “641”). Brandestini et al further discloses at least two such reflective surfaces whose length in a pixel arrangement direction of the line sensor is longer than a length thereof in a direction perpendicular to the pixel arrangement direction of the line sensor (Figure 6 re the reflective surfaces of any two of mirrors “621”, “620” and “611”); one of these surfaces as the surface nearest the object and another as a surface nearest to the line sensor (Figure 6 re the reflective surfaces of mirrors “621” and 611”); and the imaging optical element within an image reading apparatus (column 2, line 31 to column 3, line 21). The image reading apparatus of Brandestini et al will inherently have an original table on which an original is put, this being reasonably based upon Brandestini et al disclosing the imaging optical system within a scanner (column 2, line 31 to column 3, line 21).

Claims 1-2 and 6 are rejected under 35 U.S.C. 102(b) as being anticipated by Kimura et al patent number 6,166,866.

Kimura et al reads on these claims by disclosing the limitations therein including the following: an imaging optical system (column 1, lines 5-12 re copying machines) with image information being imaged onto a line sensor (column 1, lines 5-12, and Figure 12 showing a line image being formed on image plane “10”). The imaging optical system of Kimura et al will inherently have a plurality of pixels arranged linearly along the sensor this being reasonably based upon what is shown in Figure 12 re a line image as well as Kimura et al disclosing the sensor in the form of a CCD for use in a copying machine (column 1, lines 5-12 and column 23, line 25) similar to that of the claimed invention. Kimura et al further discloses the imaging optical system comprising a plurality of optical elements including a plurality of off-axial reflective surfaces (Figure 12 which discloses the reflecting surfaces as off-axial and column 15, lines 1-13, column 34, lines 20-46); the imaging optical elements including at least one of the plurality of off-axial reflective surfaces whose length in a pixel arrangement direction of the line sensor is longer than a length thereof in a direction perpendicular to the pixel arrangement direction of the line sensor (Figure 12 which discloses the line of the image plane i.e. the pixel arrangement direction in the "Y" direction and shows mirrors "R4" and "R5" as longer in the "Y" direction). Kimura et al further discloses at least two such reflective surfaces whose length in a pixel arrangement direction of the line sensor is longer than a length thereof in a direction perpendicular to the pixel arrangement direction of the line sensor (Figure 12, re surfaces "R4" and "R5"); and the imaging optical element within an image reading apparatus (column 1, lines 5-12 re a copying machine). The image reading apparatus of Kimura et al will inherently have an original table on which an original is put, this being reasonably based upon Kimura et al disclosing the imaging optical system within a copying machine (column 1, lines 5-12).

Examiner's Comments

Ross et al patent number 5,856,888 (see particularly Figure 5), Osawa patent number 5,498,864 (particularly the abstract and Figure 3), and Yamawaki et al patent number 6,141,118 (particularly Figure 5A, column 8, lines 3-9) are being cited to show imaging optical systems that would also read on a number of the above rejected claims, however, such rejections would have been repetitive.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jordan M. Schwartz whose telephone number is (571) 272-2337. The examiner can normally be reached on Monday to Friday (8:00-5:30), alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y. Epps can be reached at (571) 272-2328. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jordan M. Schwartz
Primary Examiner
Art Unit 2873
December 2, 2004